10/08/13 Agenda

- Warm Up

- Review Homework - Worksheet 7

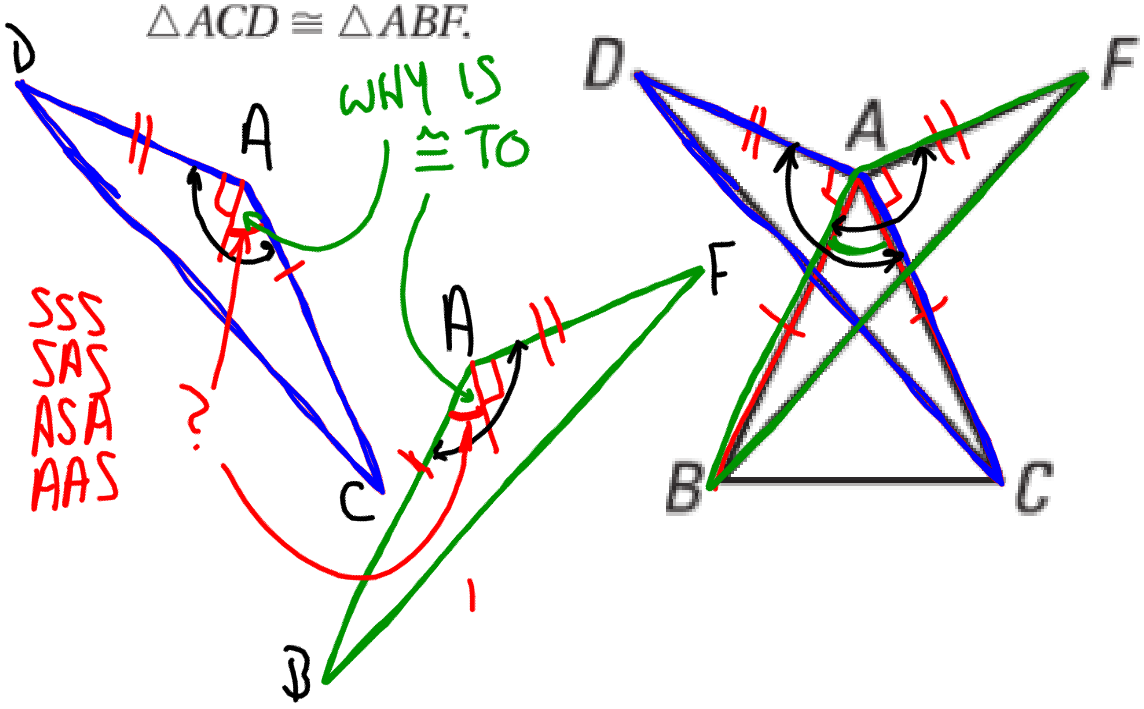
- Section 4.4 - HL Congruency

- Start Homework
    - Worksheet 8 - HL Congruency

Homework out!

Warm Up:

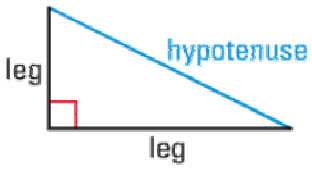
CHALLENGE Suppose $\overline{AB} \cong \overline{AC}$, $\overline{AD} \cong \overline{AF}$, $\overline{AD} \perp \overline{AB}$, and $\overline{AF} \perp \overline{AC}$. *Explain* why you can conclude that $\triangle ACD \cong \triangle ABF$.



Section 4.4 - HL Congruency Target 4E & 4F

Goal: Prove triangles congruent using HL.

RIGHT TRIANGLES In a right triangle, the sides adjacent to the right angle are called the **legs**. The side opposite the right angle is called the **hypotenuse** of the right triangle.



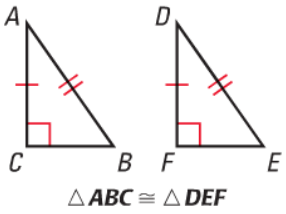
HL: (Hypotenuse, Leg)

THEOREM *For Your Notebook*

THEOREM 4.5 Hypotenuse-Leg (HL) Congruence Theorem

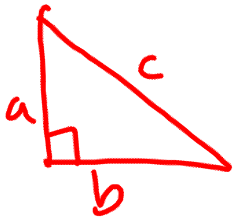
If the hypotenuse and a leg of a right triangle are congruent to the hypotenuse and a leg of a second right triangle, then the two triangles are congruent.

Proofs: Ex. 37, p. 439; p. 932



$\triangle ABC \cong \triangle DEF$

We usually need three congruent sides to prove triangles congruent, Why do you think, in this special case, we only need two congruent sides?

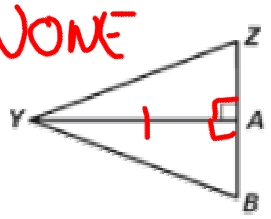


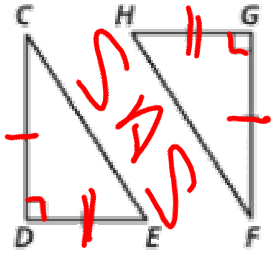
$a^2+b^2=c^2$

Section 4.4 - HL Congruency Target 4E & 4F

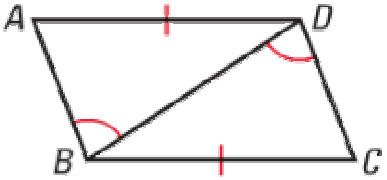
Example: Decide what reason the triangles are congruent (SSS, SAS, ASA, AAS, HL, or None)

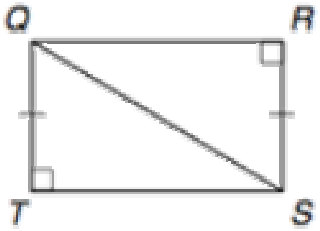
NONE

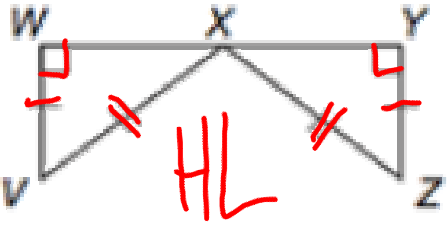




SAS

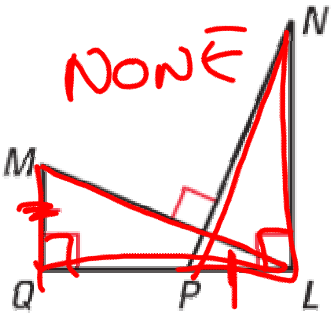


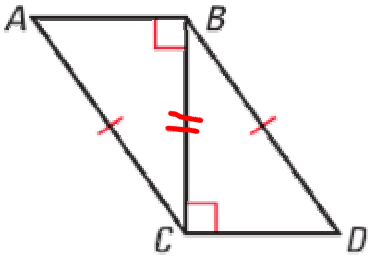




HL

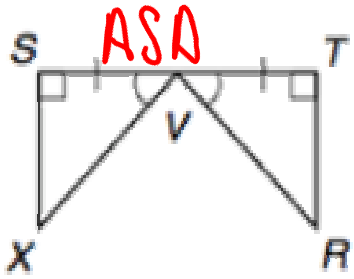
NONE

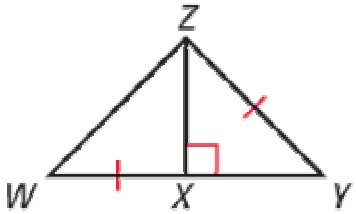




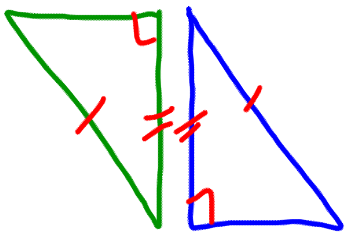
HL

ASA





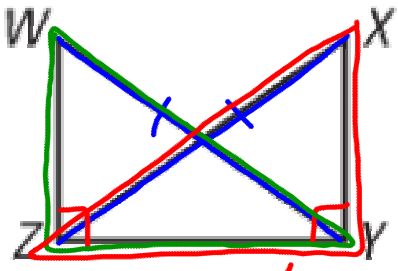
NONE

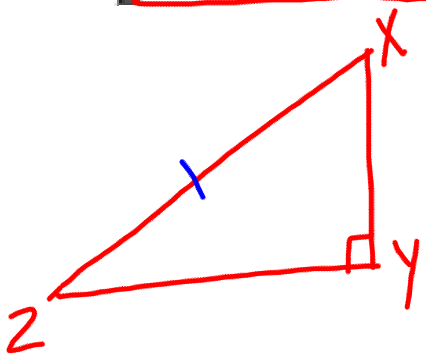


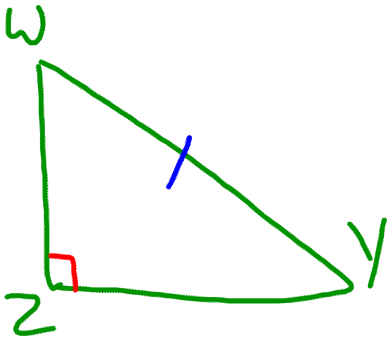
Write a proof.

GIVEN ▶ $\overline{WY} \cong \overline{XZ}$, $\overline{WZ} \perp \overline{ZY}$, $\overline{XY} \perp \overline{ZY}$

PROVE ▶ $\triangle WYZ \cong \triangle XZY$



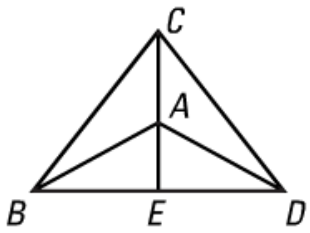




1. $\overline{WY} \cong \overline{XZ}$ $\overline{WZ} \perp \overline{ZY}$ $\overline{XY} \perp \overline{ZY}$	1. GIVEN
2. $\angle WZY$ AND $\angle XYZ$ ARE $\perp$	2. PROP OF $\perp$ LINES
3. $\angle WZY \cong \angle XYZ$	3. ALL $\perp$ $\angle$s $\cong$
4. $\overline{ZY} \cong \overline{ZY}$	4. REFLEXIVE PROP.
5. $\triangle WZY \cong \triangle XYZ$	5. HL

Section 4.4 - HL Congruency Target 4E & 4F

In the diagram, $\overline{CE} \perp \overline{BD}$ and $\angle CAB \cong \angle CAD$. Write a flow proof to show $\triangle ABE \cong \triangle ADE$.

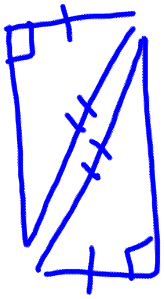


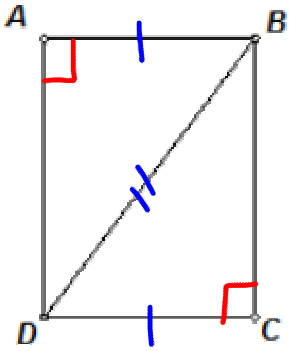
Section 4.4 - HL Congruency

Target 4E & 4F

Given: $\overline{AB} \perp \overline{AD}$, $\overline{BC} \perp \overline{DC}$, $\overline{AB} \cong \overline{DC}$

Prove: $\triangle DAB \cong \triangle BCD$



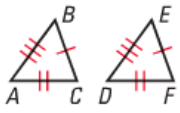
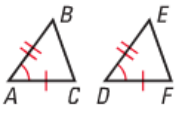
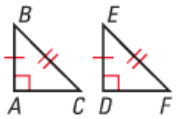
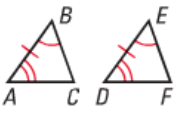
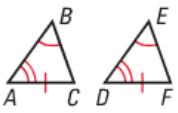


Proving Triangle Congruency - Summary

CONCEPT SUMMARY *For Your Notebook*

Triangle Congruence Postulates and Theorems

You have learned five methods for proving that triangles are congruent.

SSS	SAS	HL (right △ only)	ASA	AAS
				
All three sides are congruent.	Two sides and the included angle are congruent.	The hypotenuse and one of the legs are congruent.	Two angles and the included side are congruent.	Two angles and a (non-included) side are congruent.